

REMARKS

Applicant respectfully requests reconsideration and allowance of the subject application. Claims 1-40 are pending, of which claims 9, 11, 16, 31-32, and 36 have been amended. The amendments to claims 9, 11, 16, 31-32, and 5 36 are simply to provide clarification and/or to correct informalities noted by the Applicant, and are not to overcome prior art.

35 U.S.C. §112 Claim Rejections

Claims 9, 11-21, and 31-36 are rejected under 35 U.S.C. §112, second 10 paragraph, for being indefinite (*Office Action* p.2). Independent claims 9, 16, 31, and 36, as well as dependent claims 11 and 32 are amended herein. Accordingly claims 9, 11-21, and 31-36 are in condition for allowance and Applicant respectfully requests that the §112 rejection be withdrawn.

Claim Duplication

Claim 11 is objected to under 37 C.F.R. §1.75 as being a substantial duplicate of claim 2 (*Office Action* p.5). Claim 11 is amended herein and Applicant respectfully requests that the objection be withdrawn.

Double Patenting

Claims 2, 9, and 11 are provisionally rejected for obviousness-type double patenting as being unpatentable over claims 10 and 11 of copending Application No. 10/695,491 (*Office Action* p.5). As this is a provisional rejection, Applicant respectfully requests that the provisional rejection be 25 withdrawn in an event that no other rejections remain in the present application pursuant to MPEP §804 I.B.

35 U.S.C. §103 Claim Rejections

Claims 1-40 are rejected under 35 U.S.C. §103(a) for obviousness over U.S. Patent No. 6,628,426 to Denton et al. (hereinafter, "Denton"), in view of U.S. Patent No. 6,697,582 to Scheuer et al. (hereinafter, "Scheuer") (*Office Action* p.6). Applicant respectfully traverses the rejection.

Claim 1 recites a printing system, comprising:

10 a print unit configured to apply a colorant to a test element and to a print media; and

a calibration system configured to:

15 measure one or more colorant levels of the colorant applied to the test element before the colorant is in a finished state;

20 measure one or more color values of the colorant applied to the print media after the colorant is in the finished state; and

establish a correlation between the one or more measured colorant levels and the one or more measured color values such that the correlation can be utilized to calibrate the print unit.

25 Denton and/or Scheuer do not teach or suggest the combination of elements recited in claim 1. The Office cites to Denton for a print unit and a calibration system configured to measure colorant levels of a colorant applied to a test element, as recited in the first two elements of claim 1 (*Office Action* p.6). The Office then cites to Scheuer for the measure of color values of the
30 colorant applied to the print media after the colorant is in a finished state, as recited in the third element of claim 1 (*Office Action* p.7).

The Office has not cited, however, to Denton, Scheuer, or the Denton-Scheuer combination to establish a correlation between the measured

colorant levels and the measured color values, as recited in the last element of claim 1. Accordingly, claim 1 is allowable over Denton and/or Scheuer, and the §103 rejection should be withdrawn based at least on there being no mention by the Office of “a calibration system configured to establish a correlation between the one or more measured colorant levels and the one or more measured color values such that the correlation can be utilized to calibrate the print unit”, as recited in claim 1.

Denton describes that a sensor arrangement (56) senses light reflecting off of a toner patch (66) on an intermediate belt (36) (*Denton* col.3, lines 24-36). Each reflection signal is converted into predicted lightness value that one would expect to measure if the toner patch were transferred to paper and fused (*Denton* col.4, lines 1-5). Denton only predicts light values. There is no mention in Denton of a calibration system to actually measure color values of the colorant applied to print media after the colorant is in a finished state, as recited in claim 1. Further, there is no mention in Denton, and the Office does not cite to Denton for a correlation being established between measured colorant levels and measured color values, as recited in claim 1.

Scheuer describes comparing a target tone reproduction curve to a measurement of an actual tone reproduction curve to determine a sign of a desirable change in a target control patch density (*Scheuer* col.5, line 66 to col.6, line 3). Changing the target control patch density is based on the determined sign and a determined magnitude (*Scheuer* col.6, lines 8-10). A target tone reproduction curve is described to relate input contone values to colorant density applied to a print medium (a contone value indicates how much colorant should be applied to render a portion of an image) (*Scheuer* col.2, lines 1-3; col.1, lines 55-62).

Scheuer also describes that the target tone reproduction curve can be changed according to measurements made of an image rendered on a print medium and the associated target measurements (*Scheuer* col.17, lines 41-44). However, there is no mention in Scheuer of a calibration system to actually measure colorant levels of the colorant applied to a test element before the colorant is in a finished state, as recited in claim 1. Further, there is no mention in Scheuer, and the Office does not cite to Scheuer for a correlation being established between measured colorant levels and measured color values, as recited in claim 1.

10 Additionally, there is no motivation to combine Scheuer with Denton to establish the correlation recited in claim 1 because neither reference suggests a correlation between measured colorant levels and measured color values. As described above, Denton senses light reflecting off of a toner patch on an intermediate belt to predict light values. There is no indication that any such values in Denton might be utilized to establish a correlation with measured color values. Also as described above, Scheuer can change a target tone reproduction curve according to measurements made of an image rendered on a print medium. There is no indication that the measurements of an image rendered on a print medium might be utilized to establish a correlation with measured colorant values.

20 Accordingly, claim 1 along with dependent claims 2-8 are allowable over Denton and/or Scheuer, and the §103 rejection should be withdrawn based at least on there being no mention in either Denton or Scheuer of "a calibration system configured to establish a correlation between the one or more measured colorant levels and the one or more measured color values such that the correlation can be utilized to calibrate the print unit", as recited in claim 1.

Claim 9 recites a printing system, comprising:

a print unit configured to apply a colorant to a test element; and

5 a calibration system configured to:

measure one or more colorant levels of the colorant applied to the test element before the colorant is in a finished state;

10 convert the one or more measured colorant levels to corresponding one or more predicted color values;

compare the one or more predicted color values to target color values; and

15 calibrate the print unit if a difference between the one or more predicted color values and the target color values exceeds a threshold value.

20 The Office recognizes that Denton fails to teach the comparison of predicted color values to target color values, as recited in claim 9 (*Office Action* p.7). The Office cites to Scheuer for this feature. However, as described above in the response to the rejection of claim 1, there is no mention in Scheuer of a calibration system to measure colorant levels of the colorant applied to a test
25 element before the colorant is in a finished state, and there is no motivation found in either Denton or Scheuer to combine Scheuer with Denton. As such, Scheuer does not convert measured colorant levels because Scheuer does not measure the colorant levels applied to a test element, as recited in claim 9.

Accordingly, claim 9 along with dependent claims 10-15 are allowable
30 over the Denton-Scheuer combination for at least the reasons described above, and Applicant respectfully requests that the §103 rejection be withdrawn.

Claim 16 recites “a second calibration mode configured to... establish a correlation between the measured colorant levels and the measured color values.”

5 Claim 22 recites a printing device to “establish a correlation between the measured colorant levels and the measured color values such that the correlation can be utilized to calibrate a print unit.”

Claim 26 recites “establishing a correlation between the measured colorant levels and the measured color values such that the correlation can be utilized to calibrate a print unit.”

10 Claims 36 and 37 recite “establishing a correlation between the measured colorant levels and the measured color values”.

Claim 39 recites a printing device to “establish a correlation between the measured colorant levels and the measured color values”.

15 Claim 40 recites a “means for establishing a correlation between the measured colorant levels and the measured color values”.

As described above in the response to the rejection of claim 1, the Office has not cited to Denton and/or Scheuer for establishing a correlation between measured colorant levels and measured color values, as recited in independent
20 claims 16, 22, 26, 36-37, and 39-40.

Accordingly, claims 16-21, 22-25, 26-30, 36-38, and 39-40 are allowable over the Denton-Scheuer combination, and the §103 rejection should be withdrawn.

25 Claim 31 recites “measuring colorant levels of a colorant applied to a test element before the colorant is in a finished state”, and “converting the measured colorant levels to corresponding predicted color values”. As

described above in the response to the rejection of claims 1 and 9, the Office recognizes that Denton fails to teach comparing predicted color values to target color values, as recited in claim 31 (*Office Action* p.7). Additionally, there is no mention in Scheuer of measuring colorant levels of a colorant applied to a test element before the colorant is in a finished state, and there is no motivation found in either Denton or Scheuer to combine Scheuer with Denton. As such, Scheuer does not convert measured colorant levels because Scheuer does not measure the colorant levels applied to a test element, as recited in claim 31.

Accordingly, claim 31 along with dependent claims 32-35 are allowable over the Denton-Scheuer combination, and the §103 rejection should be withdrawn.

Conclusion

Pending claims 1-40 are in condition for allowance. Applicant respectfully requests reconsideration and issuance of the subject application. If any issues remain that preclude issuance of this application, the Examiner is urged to contact the undersigned attorney before issuing a subsequent Action.

Respectfully Submitted,

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By: 

David A. Morasch
Lee & Hayes, PLLC
Reg. No. 42,905
(509) 324-9256 x 210